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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,936	01/29/2004	Yuval Barkan		1872

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EXAMINER

HUYNH, CHUCK

ART UNIT	PAPER NUMBER
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2683

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/765,936	Applicant(s) BARKAN, YUVAL	
	Examiner Chuck Huynh	Art Unit 2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in Israel on July 29, 2001. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 1, 14, 4, 5, 13, 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 14, it is asserted that "...each new cell is randomly located," in the creation of smaller cells. It is uncertain what Applicant is intending to claim. Examiner interprets "randomly located" to mean that the smaller cells to be located anywhere within the larger cell. It is indefinite to what Applicant is claiming to be "randomly located." Even the decision to form a new/smaller cell anywhere cannot be truly at random when the formation of a smaller cell requires a known location (for

implementation) to incorporate the cell into the system. Furthermore, in paragraph [0022], Applicant discloses randomly deployed cells within a cellular network is according to a cellular network, such as GSM for example, is carefully planned before deployment. Therefore, more specific claim language is required to make the claim definite in distinguishing the claimed invention.

Furthermore, regarding claim 1, the phrase "whenever possible" renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "whenever possible"), thereby rendering the scope of the claim unascertainable. The scope of the claim is not clear when the function is possible or when the function is not possible. Further specification is required.

3. Regarding claim 4, it is unclear to what is a new cell, which become inactive. It is indefinite to if a new cell is the cell that is taking over a communication or a cell in current communication or an inactive cell.

4. There is insufficient antecedent basis for the limitation of claims 5, 13 and 15. It is unclear to what is the "original base station". It is indefinite to whether the original base station refers to the larger cell or another base station from any other cell.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 6-11, 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher et al. (hereinafter Fletcher) in view of Tu et al. (hereinafter Tu).

Regarding claim 1, Fletcher discloses a method for gradual expansion of a cellular network comprising the steps of:

creating a plurality of new, smaller cells within an existing, larger cell, wherein each new cell is randomly located (construction of microcells within macrocells Col 11, lines 51-66; Fig.1);

integrating each of the new cells within the existing cellular network by connecting it to the cellular network infrastructure (Col 8, lines 14-20, Col 11, lines 50+; Col 12, lines 1+); and

giving priority in connecting mobile users through one of the new cells base stations, by transferring calls from the existing base station to a new base station (can be interpreted from a macrocell to a microcell), ***whenever possible*** (Col 4, lines 14-26; Col 8, lines 57 – Col 9, line 14; Col 22, lines 7-37).

Fletcher discloses all the particulars of the claim, but can be unclear on giving priority to the handing off to the new cells.

However, Tu further clarifies the priority to handing off between the macrocells to the microcells. It is a form of priority for slow moving mobile users to be handed off to microcells and remain to be served by microcells instead of macrocells whenever possible (Col 2, lines 20-24; Col 7, lines 7-12, 39-47, 56-62).

It would have been obvious to one ordinarily skilled in the art at the time of invention to incorporate Tu's disclosure with Fletcher to provide continuous communication.

Regarding claim 2, Fletcher discloses the method for the expansion of a cellular network according to claim 1, further including the step of coordinating between the new cells for choosing which cell will handle each mobile user (depending which coverage area the mobile user is in (Figs. 2A-2D, 3A-3B; Col 22, lines 7+).

Regarding claim 3, Fletcher discloses the method for the expansion of a cellular network according to claim 2, further including the step of coordinating between the new cells for transferring a mobile user between cells (from macrocell to microcell Col 22, lines 7+).

Regarding claim 6, Fletcher discloses the method for the expansion of a cellular network according to claim 1, further including the step of connecting the first new cells

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at a low level (using cables/wires as connection) in the existing cellular network (Col 4, lines 50-65).

Regarding claim 7, Fletcher discloses the method for the expansion of a cellular network according to claim 6, further including the step of connecting the new cells at a high level (radio connection to provide such capability as handover) in the existing cellular network when the new cells cover a significant part of the original cell (Col 4, lines 27-38, 57-59).

Regarding claim 8, Fletcher discloses the method for the expansion of a cellular network according to claim 1, further including the step of allocating frequencies to new cells such as to minimize interference with the existing cell and between the new cell (Col 4, lines 27-37).

Regarding claim 9, Fletcher discloses the method for the expansion of a cellular network according to claim 1, further including the step of conditional beacon activation at each new cell, responsive to the state of availability of a beacon from the original base station (a page signal broadcast by a macrocell, in response causing a page signal to also be broadcasted into the microcells Col 12, lines 33-45).

Regarding claim 10, Fletcher discloses the method for the expansion of a cellular network according to claim 1, further including the step of location finding and reporting

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by each new cell (Col 2, lines 34+, Col 12, lines 10-11, 20-23 (such as a VLR); Fig. 1, 3A).

Regarding 11, Fletcher discloses the method for the expansion of a cellular network according to claim 10, further including the step of forming location areas whenever possible, for efficient calls handover (Fig. 1; handoff Col 4, lines 27-37).

Regarding claim 15, Fletcher discloses the method for the expansion of a cellular network according to claim 12, wherein a mobile phone can connect both with the original base station and new base station, and wherein priority is given in connecting to a new base station whenever possible (can be interpreted from a macrocell to a microcell), (Col 4, lines 14-26; Col 8, lines 57 – Col 9, line 14; Col 22, lines 7-37, whenever possible is defined as when mobile is within coverage area).

Fletcher discloses all the particulars of the claim, but can be unclear on giving priority to the handing off to the new cells.

However, Tu further clarifies the priority to handing off between the macrocells to the microcells. It is a form of priority for slow moving mobile users to be handed off to microcells and remain to be served by microcells instead of macrocells whenever possible (Col 2, lines 20-24; Col 7, lines 7-12, 39-47, 56-62).

It would have been obvious to one ordinarily skilled in the art at the time of invention to incorporate Tu's disclosure with Fletcher to provide continuous communication.

Regarding claim 16, Fletcher discloses in a cellular network system, an add-on base station (microcells transceivers Col 4, lines 50+; Col 11, line 63 – Col 12, line 6) comprising transmitters, receivers and a controller, wherein the controller includes means for listening to the cellular traffic and for allowing the base station to take control according to predefined rules (handoff Col 4, lines 27+; Col 15, line 61 – Col 16, line 34).

Fletcher discloses all the particulars of the claim, but is unclear about the controller being a part of the transceiver station. However, it is known in the art that base stations are comprised of a controller, as shown in Russell (Col 1, lines 62+; Fig. 1B).

It would have been obvious to one ordinarily skilled in the art at the time of invention to incorporate Russell's disclosure to control connectivity.

Regarding claim 17, Fletcher discloses the add-on base station according to claim 16, wherein the transmitter further includes means for beacon transmission control and the controller further includes means for a conditional activation of the beacon, responsive to the state of reception of the original base station's beacon (a page signal broadcast by a macrocell, in response causing a page signal to also be broadcasted into the microcells Col 12, lines 33-45).

Regarding claim 18, Fletcher discloses the add-on base station according to claim 16, wherein the transmitter further includes means for radiation emission control, and the controller further includes means for controlling the emission level at the transmitter (emission of different frequencies Col 4, lines 27+).

Regarding claim 19, Fletcher discloses the add-on base station according to claim 16, further including location finding means and wherein the controller further includes means for using or reporting the location information (Col 2, lines 34+, Col 12, lines 10-11, 20-23 (such as a VLR); Fig. 1, 3A).

Regarding claim 20, Fletcher discloses the add-on base station according to claim 16, wherein the controller includes means for connecting either at a low level (wired connection) or a high level (radio/wireless connection) in an existing cellular network (Col 4, lines 50-65) (Col 4, lines 27-38, 57-59; Col 12, lines 3-4).

7. Claim 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher in view of Tu in further view of Russell et al. (hereinafter Russell).

Regarding claim 4, Fletcher in view of Tu discloses all the particulars of the claim except the method for the expansion of a cellular network according to claim 2, further including the step of coordinating between the new cells for taking over communications with a mobile user from a new cell which become inactive.

However Russell does disclose connection option in case a microcell failure which reads on the limitation of coordinating between the new cells for taking over communications with a mobile user from a new cell which become inactive (Col 30, lines 32-36).

It would have been obvious to one ordinarily skilled in the art at the time of invention to incorporate Russell's disclosure to provide connectivity.

Regarding claim 5, Fletcher in view of Tu discloses all the particulars of the claim except the method for the expansion of a cellular network according to claim 1, further including the step of deactivating the original base station which covers the existing cell, when the new cells effectively cover the existing cell.

However, it is interpreted that the microcells can provide full coverage of a macrocell or any other microcell, and therefore can effectively cover any part of the existing cell in case of a deactivation or failure of a base station covering a particular cell, which reads on the limitation of including the step of deactivating the original base station which covers the existing cell, when the new cells effectively cover the existing cell (Col 30, lines 32-36; Col 34, lines 11+).

It would have been obvious to one ordinarily skilled in the art at the time of invention to incorporate Russell's disclosure to provide connectivity.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Fletcher.

Regarding claim 12, Fletcher discloses a method for gradual expansion of a cellular network comprising the steps of:

A. Creating and integrating a plurality of new, smaller cells within an existing, larger cell, wherein the new cells cover a small part of the existing cell and are connected at a low level (i.e. coaxial transmission lines, fiber optic) connection to the existing cellular network (Col 4, lines 50+; Fig. 2A);

B. Creating and integrating additional new, smaller cells within the existing cell, wherein the new cells cover a significant (this is a relative term) part of the existing cell area and are connected at a high level (radio/wireless signals) to the existing cellular network (Col 11, lines 61+; Col 12, lines 1+; Fig. 1.)

Regarding claim 13, Fletcher discloses the method for the expansion of a cellular network according to claim 12, further including the step of deactivating the original base station when the new cells cover most (is a relative term, and according to Fletcher it is possible to increase the number of microcells Col 13, lines 36-39) of the existing cell area (the microcells actually replaces the functionality of the macrocell, which formerly was in operation or active, where the microcells currently replaces the macrocell Col 13, lines 34-41; Fig. 2A).

Regarding claim 14, Fletcher discloses the method for the expansion of a cellular network according to claim 12 wherein each new cell can be randomly located, in an unplanned manner (construction of microcells within macrocells Col 11, lines 51-66; Fig.1).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Salonaho discloses a Handover in a mobile communication system having a multilayer radio coverage, entailing macrocells and microcells.

Yamada et al. discloses a Method for allocating channels in a microcellular system

Scheinert discloses an Arrangements of base transceiver stations of an area-covering network


Bergkvist discloses Selecting a communications channel for a mobile station based on handover intensity

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuck Huynh whose telephone number is 571-272-7866. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chuck Huynh


ELISEO RAMOS-FELICIANO
PATENT EXAMINER

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